REMARKS

Claims 1-7 and 9-18 are pending in this application. Non-elected claim 10 is withdrawn from consideration by the Examiner. By this Amendment, claims 1 and 18 are amended. Support for the amendments to claim 1 may be found, for example, in the specification, at page 4, line 24 to page 5, line 8. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejections Under 35 U.S.C. §103

The Office Action rejects claims 1-7, 9 and 11-18 under 35 U.S.C. §103(a) as having been obvious over Peterson; and rejects claims 1-7, 9, 11-13 and 17 under 35 U.S.C. §103(a) as having been obvious over Bawendi. Applicants respectfully traverse these rejections.

A. Peterson

By this Amendment, independent claim 1 is amended to recite, in part, "incubating the composition in contact with a surface of the solid phase substrate to immobilize the nucleic acid and the compound or the salt thereof on the solid phase substrate by co-adsorption." Peterson fails to teach or suggest at least this limitation.

As Applicants have previously argued on page 7 of the Amendment filed on February 29, 2008, and as described in the present specification, independent claim 1 requires co-adsorption of a nucleic acid and a compound represented by formula I. The nucleic acid and a compound represented by formula I are mixed and formed into a composition *before* being contacted with and co-adsorbed to the substrate. See Examples 1 and 2 of the present specification. Consequently, the nucleic acid and the compound represented by formula I are simultaneously exposed to the substrate during the co-adsorption step. This prevents the compound represented by formula I from adsorbing too fast to the substrate, thereby providing

an "effective and superior co-adsorption method [which allows for] adsorption of a nucleic acid probe on the surface of a solid phase substrate at optimal density." See specification, at page 4, lines 19-23. Therefore, the claims are directed to an easy and reproducible method of achieving optimal density of nucleic acid probes immobilized onto a substrate.

In contrast, Peterson fails to teach or suggest the recited co-adsorption method. Instead, Peterson teaches an embedding method. See Applicants' specification, at page 3, lines 9-14, lines 10-11 for a general description of the embedding method. ("Embedding method is a film formation method comprising the steps of carrying out a high-density adsorption of a nucleic acid probe onto a solid phase substrate, and embedding spacer molecules in the remaining spaces.") See page 5164, first column of Peterson, which describes the embedding method used therein. (For immobilizing DNA onto a substrate, "the gold [surface plasmon resonance] substrate was exposed to DNA solution for >10 [hours] unless otherwise stated. The ssDNA-C_6-SH probe film was treated with 1mM mercaptohexanol solution for 1-2 [hours].") Therefore, Peterson fails to teach or suggest every limitation of independent claim 1.

Moreover, as described in the present specification, at page 3, lines 17-20, a problem with the embedding method is that it is not possible to completely control the density of the nucleic acid probe during the initial step of adsorbing the nucleic acid probe to the substrate. Although it has been reported that controlling the time of adsorption of the nucleic acid probe to the substrate is one means of resolving this problem, it is "extremely difficult to efficiently control nucleic acid density using an exceedingly unstable parameter[,] such as reaction time." See page 3, lines 20-26 of Applicants' specification. Yet still, another problem is that "the step of embedding the spacer molecule changes the density of the nucleic acid probe that was first adsorbed, thus making [the embedding method] an unsuitable method to adjust density [of the

nucleic acid probe]." *Id*, at lines 26-31. Therefore, the embedding method, as used in Peterson, fails to achieve an optimal density of nucleic acid probe immobilized to a substrate.

Accordingly, Peterson fails to teach or suggest at least "incubating the composition in contact with a surface of the solid phase substrate to immobilize the nucleic acid and the compound or the salt thereof on the solid phase substrate by co-adsorption," as recited by independent claim 1. Moreover, the embedding method as taught by Peterson would not have achieved the optimal density of nucleic acid probes immobilized onto a substrate that is achieved by the present claims. For at least these reasons, Peterson would not have rendered obvious independent claim 1 and the claims dependent therefrom.

Additionally, Peterson fails to teach or suggest at least "wherein the composition comprises a nucleic acid and a compound represented by formula I in a ratio of 40/60 to 60/40," as recited by independent claim 1. However, page 5 of the Office Action fails to give this limitation patentable weight, by citing *In re Aller*, 220 F.2d 454, 456 (CCPA 1955), and indicating that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

However , as discussed above, Peterson fails to teach or suggest at least a co-adsorption method, as recited by independent claims 1. Therefore, contrary to the Office Action's allegations, "the general conditions" of claim 1 are not disclosed, or even taught or suggested by Peterson. Therefore, for at least this reason, Applicants respectfully submit that the limitation "wherein the composition comprises a nucleic acid and a compound represented by formula I at a ratio of 40/60 to 60/40" should be given patentable weight, and that Peterson fails to teach or suggest at least this limitation of claim 1. For this additional reason, Peterson fails to teach or suggest every limitation of independent claim 1 and the claims dependent therefrom.

Thus, Peterson would not have rendered obvious independent claim 1 and the claims dependent therefrom.

Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Bawendi

Bawendi fails to teach or suggest at least "incubating the composition in contact with a surface of the solid phase substrate to immobilize the nucleic acid and the compound or the salt thereof on the solid phase substrate by co-adsorption," as recited by claim 1.

At most, the sections of Bawendi that the Office Action cites to for supporting the rejection teaches nucleic acid probes being immobilized on a spherical surface of a quantum dot. However, nowhere in Bawendi is co-adsorption taught or suggested, or the problem of achieving optimum nucleic acid probe density immobilized on a substrate even addressed. For at least these reasons, Bawendi fails to teach or suggest every limitation of independent claim 1 and the claims dependent therefrom. Accordingly, Bawendi would not have rendered obvious independent claim 1 and the claims dependent therefrom.

Additionally, nowhere does Bawendi teach or suggest the limitation, "wherein the composition comprises a nucleic acid and a compound represented by formula I at a ratio of 40/60 to 60/40," as recited by claim 1, which, for the reasons set forth above, should be given patentable weight. For at least this additional reason, Bawendi fails to teach or suggest every limitation of independent claim 1 and the claims dependent therefrom. Accordingly, Bawendi would not have rendered obvious independent claim 1 and the claims dependent therefrom.

Reconsideration and withdrawal of the rejections are respectfully requested.

II. Rejoinder

Applicants request rejoinder of withdrawn claim 10. A requirement for restriction should be withdrawn when a generic claim is allowable and any previously withdrawn claim

depends from or otherwise requires all the limitations thereof. *See* MPEP §821.04(a). Because independent claim 1 is a generic claim from which claim 10 depends, and because claim 1 is believed to be allowable for at least the reasons presented above, Applicants respectfully request rejoinder and examination of claim 10.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of this application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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